

HIGH TEMPERATURE HIGH PRESSURE CAPSULE FOR PROCESSING MATERIALS IN SUPERCRITICAL FLUIDS

Abstract of Disclosure

A capsule for containing at least one reactant and a supercritical fluid in a substantially air-free environment under high pressure, high temperature processing conditions. The capsule includes a closed end, at least one wall adjoining the closed end and extending from the closed end; and a sealed end adjoining the at least one wall opposite the closed end. The at least one wall, closed end, and sealed end define a chamber therein for containing the reactant and a solvent that becomes a supercritical fluid at high temperatures and high pressures. The capsule is formed from a deformable material and is fluid impermeable and chemically inert with respect to the reactant and the supercritical fluid under processing conditions, which are generally above 5 kbar and 550 °C and, preferably, at pressures between 5 kbar and 80 kbar and temperatures between 550 °C and about 1500 °C. The invention also includes methods of filling the capsule with the solvent and sealing the capsule, as well as an apparatus for sealing the capsule.

Figures